

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: Yasushi KANEKO et al.

Serial No.: 08/981,654

Group Art Unit: 2871

Filed: January 8, 1998

Examiner: D. Nguyen

For: LIQUID CRYSTAL SHUTTER AND METHOD OF DRIVING THE SAME



INFORMATION DISCLOSURE STATEMENT AND STATEMENT  
PURSUANT TO TO 37 CFR 1.97(d)

**Attn: Group Director**

Director of Patents and Trademarks  
Washington, D.C. 20231

February 23, 2001

Sir:

The attention of the Patent and Trademark Office is hereby directed to the document listed on the attached Form PTO-1449. A copy of the documents is attached.

Asano et al. (U.S. Patent No. 4,974,940) describes in its abstract "a twisted angle  $\alpha$  of the twisted structure in the liquid crystal layer is  $220^\circ$  to  $300^\circ$ " and " $\Delta n \cdot d$ , . . . , of the liquid crystal layer is  $0.60$  to  $0.85\mu\text{m}$ ".

However, a pair of polarizing plates in claims 1 and 3 of the invention has respective absorption axes which are orthogonal to each other. In contrast, the angle of polarizing axes of a pair of polarizing plate in Asano is less than  $90^\circ$  ( $90^\circ - \delta$ ) and the absorption axis is orthogonal to the polarizing axis, thereby the angle formed with both absorption axes is not  $90^\circ$ . This is clear from the description of Asano (see column 4, line 31, equation (1)).

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$$\alpha + \beta - \gamma - 180^\circ = 90^\circ - \delta \text{ (wherein } 0^\circ < \delta < 40^\circ \text{); and}$$

in the description of column 4, lines 53-55, "In the above-given Equation (1), the value of the left side is equivalent to an angle made by the polarizing axes themselves of a pair of the polarizing plates".

The value of the left side of the above equation is equal to  $90^\circ - \delta$ , an angle made by the polarizing axes themselves, which is less than  $90^\circ$ .

Furthermore, Asano does not disclose or suggest the following features a, b in claims 1 and 3 of the present invention.

- a) absorption axes of the polarizing plates being angled within a range of  $\pm 40^\circ$  to  $\pm 50^\circ$  relative to a direction in which intermediate liquid crystal molecules are orientated, the direction indicating a direction of orientation of the liquid crystal in an intermediate portion in a direction of thickness of the liquid crystal device; and
- b) when the liquid crystal device is driven by applying DC or AC voltage of 10 to 20 V, birefringence of the liquid crystal device is nullified.

This Information Disclosure Statement is submitted after the mailing of final action, a Notice of Allowance, or an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee.

The undersigned hereby certifies

XX that each item of information contained in this statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement, or

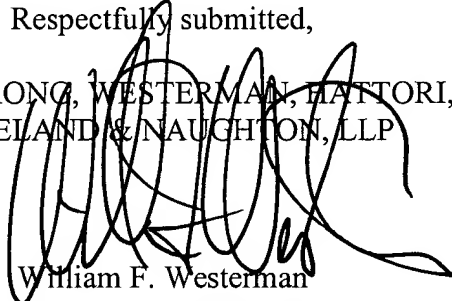
-- that no item of information contained in this statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no information contained in this statement was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of this statement.

The above information is presented so that the Patent and Trademark Office can, in the first instance, determine any materiality thereof to the claimed invention. See 37 CFR 1.104(a) and 1.106(b) concerning the PTO duty to consider and use any such information. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the documents cited in the attached Form PTO-1449 be made of record therein and appear on the first page of any patent to issue therefrom.

A check is attached hereto which covers the \$ 180.00 fee set forth in 37 CFR § 1.17(p). The Commissioner is hereby authorized to charge any additional fee (or credit any overpayment) associated with this Statement to our Deposit Account No. 01-2340. Two copies of this authorization are attached.

Respectfully submitted,

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Enclosures: PTO-1449 and 1 reference  
Foreign Office Action